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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: VIII**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: 23CY8IEEDM **Max Marks: 100**
Course: Environmental Disaster Management and Mitigation

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

		UNIT - I	*CO*	*PO*	Marks
1	a)	Define habitat and an ecosystem. Name the two components in Ecosystem.	*CO1*	*PO1*	**4**
	b)	Classify radioactive wastes based on the intensity of radioactivity. Explain the construction and working of radioactivity sensing scintillation counter with a neat diagram.	*CO3*	*PO6*	**8**
	c)	List any four global effects of pollution and suggest a remedial measure for each.	*CO5*	*PO7*	**8**
		UNIT - II			
2	a)	Identify any four techniques involved in artificial ground water recharging.	*CO1*	*PO1*	**4**
	b)	Define hard water. Elaborate on the softening of water by ion exchange method with a diagram and relevant reactions.	*CO5*	*PO7*	**8**
	c)	Define COD. Why COD > BOD. Solve for COD if 50 mL of an industrial effluent is allowed to react with $K_2Cr_2O_7$ solution. The unreacted $K_2Cr_2O_7$ consumed 25mL of 0.05 N FAS. In blank titration, 38 mL of same FAS is consumed.	*CO2*	*PO2*	**8**
		OR			
3	a)	Classify the impurities in water with suitable examples.	*CO1*	*PO1*	**4**
	b)	Compare the methodologies of rain water harvesting in rural and urban areas.	*CO3*	*PO6*	**8**
	c)	Outline the steps involved in primary and any one secondary waste water treatment.	*CO5*	*PO7*	**8**

			UNIT - III			
	4	a)	Define “criteria air pollutants” and “air quality index”	*CO1*	*PO1*	**4**
		b)	Mention various components in a sensor. Outline the steps involved in the working of NOx gas sensor.	*CO2*	*PO2*	**8**
		c)	Why is particulate matter in air considered as a pollutant? Summarize the construction and working of any two devices used to remove particulate matter from an effluent gas with suitable diagrams.	*CO5*	*PO7*	**8**
			UNIT - IV			
	5	a)	Identify the main sources of e-waste and mention the toxic materials present in e-waste.	*CO1*	*PO1*	**4**
		b)	Define Bio-waste processing. List any three advantages and disadvantages.	*CO3*	*PO6*	**8**
		c)	Differentiate the techniques involved in the management of solid and liquid hazardous waste.	*CO5*	*PO7*	**8**
			UNIT - V			
	6	a)	List the major sustainable energy sources.	*CO1*	*PO1*	**4**
		b)	Define green chemistry. State any 3 principles of green chemistry.	*CO1*	*PO1*	**8**
		c)	Appraise the advantages and disadvantages of Biodiesel.	*CO5*	*PO7*	**8**
			OR			
	7	a)	Justify: (i) Biodiesel is less polluting than petroleum diesel. (ii) Hydrogen fuel is one of the best sustainable fuels.	*CO5*	*PO7*	**4**
		b)	Outline the construction and working of a photovoltaic cell. Analyze the usage of Quantum dots to increase its efficiency.	*CO2*	*PO2*	**8**
		c)	Define “Atom economy”. Calculate the atom economy for the generation of water during combustion of methane to form carbon dioxide and water. $CH_4 + 2\ CO_2 \longrightarrow CO_2 + 2H_2O$ Given atomic weight of C=12, O=16, H=1	*CO3*	*PO6*	**8**

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